

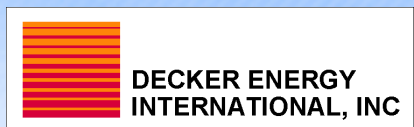
Biomass to Power



Southeast Biomass: Project Development Incentives and Challenges

What is your View and Why?

March 31st, 2010





Fundamental Principals



Conversion of Biomass to Power

- This is an Energy Business
 - real energy,
 - real capacity,
 - real commodities delivering real value.
- This is a Commodity Business
 - Low Cost, Dependable, Reliable Producer Succeeds
- Extensive Policy / Regulatory Implications and Limitations.

Old cabin at Turkey Creek, Cocoa, FL



On the Tomoka, Volusia County, FL



Jupiter R.R. Jupiter FL 1886



3675. JUPITER & LAKE WORTH R.R. W.H.J. & CO

SHORPY

St. Lucie at Eden, Indian River 1884



3656. THE ST. LUCIE. INDIAN RIVER.

1648

Monthly Review

2008

DOE/EIA-0384(2008)
June 2009



ANNUAL ENERGY OUTLOOK 2010

EARLY RELEASE



U.S. Energy Information
Administration

www.eia.
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Monthly Energy Review

www.eia.gov/mer

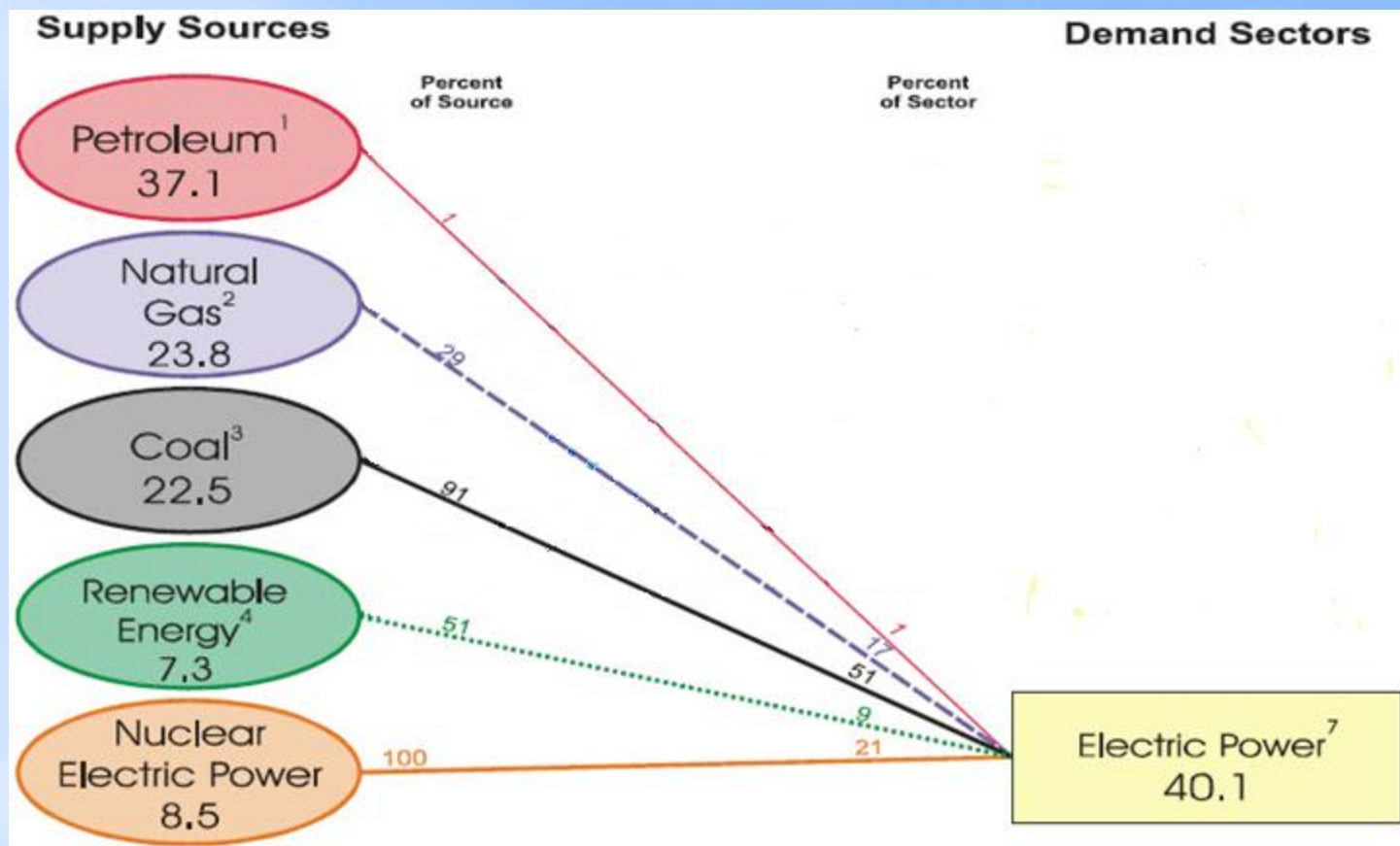
January 2010

DOE/EIA-0035(2010/01)



U.S. Energy Information Administration
Independent Statistics and Analysis

U.S. Primary Energy Consumption by Source and Sector, 2008 (Quadrillion Btu)



¹Does not include the fuel ethanol portion of motor gasoline—fuel ethanol is included in "Renewable Energy."

²Excludes supplemental gaseous fuels.

³Includes less than 0.1 quadrillion Btu of coal coke net imports.

⁴Conventional hydroelectric power, geothermal, solar/PV, wind, and biomass.

⁵Includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

⁶Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

⁷Electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

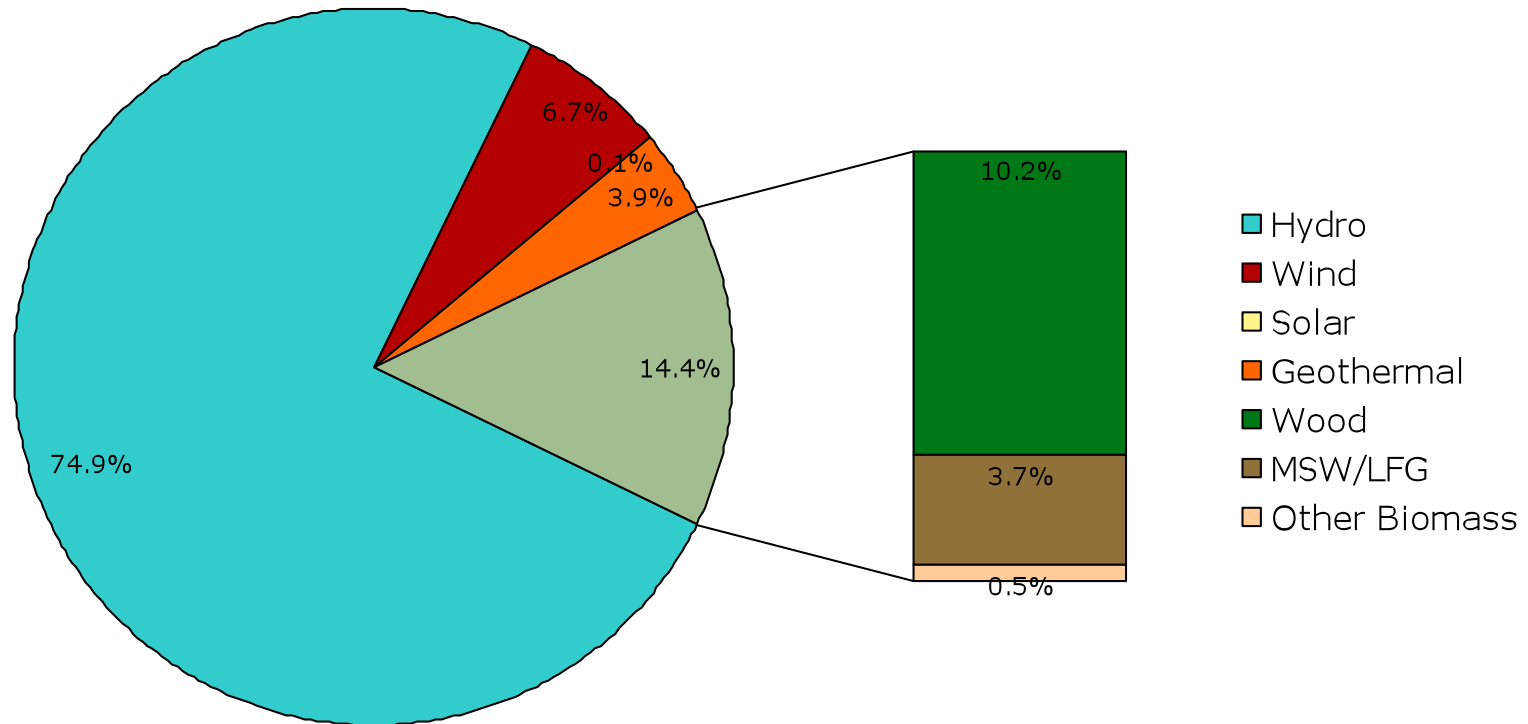
Existing Biomass Power Industry

Source: Annual Energy Outlook 2009 (EIA)



- 6,820 MW biomass capacity of all types
- 2,180 MW stand-alone facilities (~110 sites)
- Top states
 - California: 41 plants, 722 MW
 - Maine: 11 plants, 267 MW
 - Florida: 7 plants, 230 MW
 - Michigan: 8 plants, 170 MW
- Highly fragmented ownership

2006 Renewable Electricity Biomass Generation 14.4%



Total = 385 million MWh in 2006

Why Biomass Based Energy?



- Biomass energy is an effective alternative to traditional energy sources in appropriately conceived applications
- Can contribute to energy independence and national security by displacing NG for transportation use
- Fossil fuels possess unquantifiable carbon mitigation risk
- Merges with the electrical “system” well.

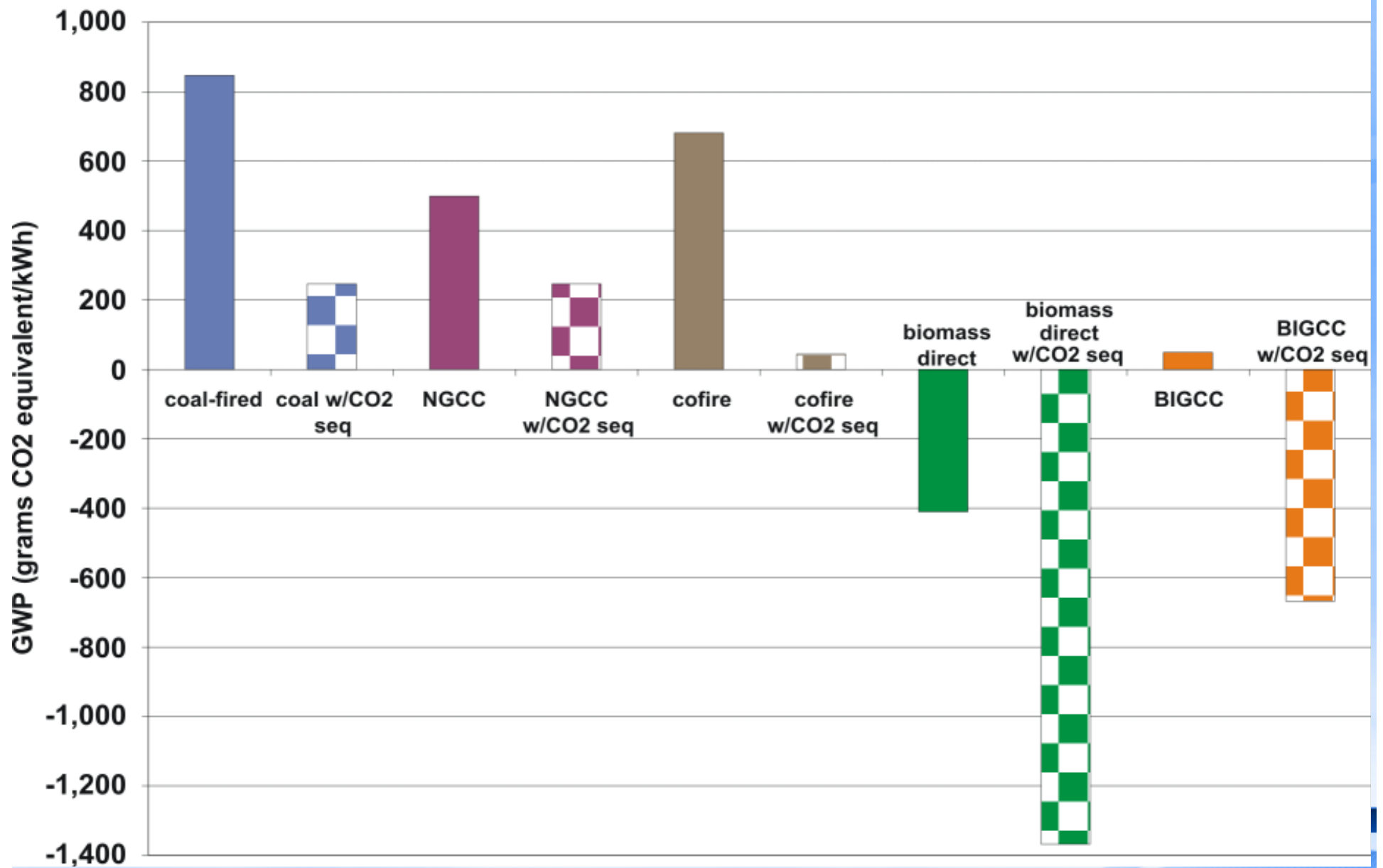


Figure 1: January 2004 • NREL/TP-510-32575, Biomass Power and Conventional Fossil Systems with and without CO2 Sequestration – Comparing the Energy Balance, Greenhouse Gas Emissions and Economics

Biomass Power Benefits



- Abundant supply if properly sited
- Cost effective Sustainable technology
(Natural Solar Collector)
- Firm electrical capacity
- Precursor to Liquid Fuel market
- Substantial CO₂ reductions at a reasonable cost

Biomass Power Benefits



- Economic Impact
 - Total Capital investment of 2.5 to 4.5 million per megawatt
 - Construction cost 75 to 80 percent of total
 - Jobs; 25 to 30 direct, 125 to 300 indirect
 - 200 – 400 construction over a 2 to 3 year period
 - LOCAL Economic Activity will exceed \$15 million annually
 - Primarily driven by the collection, harvest, transportation and processing of fuel supply

Biomass Power Benefits



- Environmental Impact
 - Sustainable, Environmentally Friendly Industry
 - Beneficial Reuse of Waste Energy Sources
 - Positive Impact far exceeds Negative Impact
- Landowner (Forestry and Agricultural)
 - Market for low value btu's (residues)
 - Potential Alternative market for growing biomass based btu's

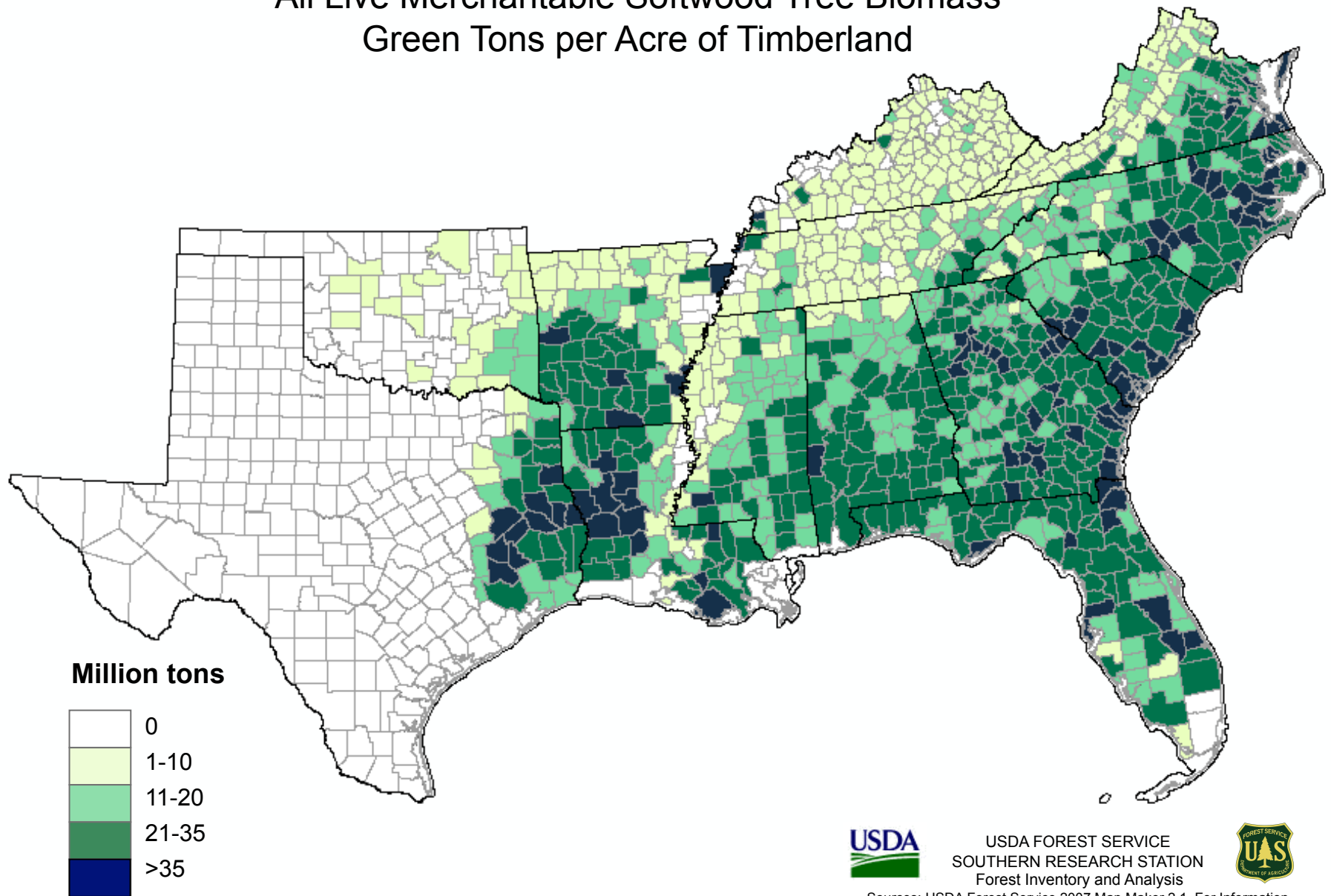
Biomass Definition Concerns



“ Are they going to be willing to plant and replant trees in a market that has some sort of restricted definition of biomass? At the end of the day, such restrictions mean that you’re interfering with an individual landowners forest management decisions.”

Brooks Mendell, president of Forisk Consulting, based in Athens, Georgia, November 2009

All Live Merchantable Softwood Tree Biomass Green Tons per Acre of Timberland



USDA FOREST SERVICE
SOUTHERN RESEARCH STATION
Forest Inventory and Analysis

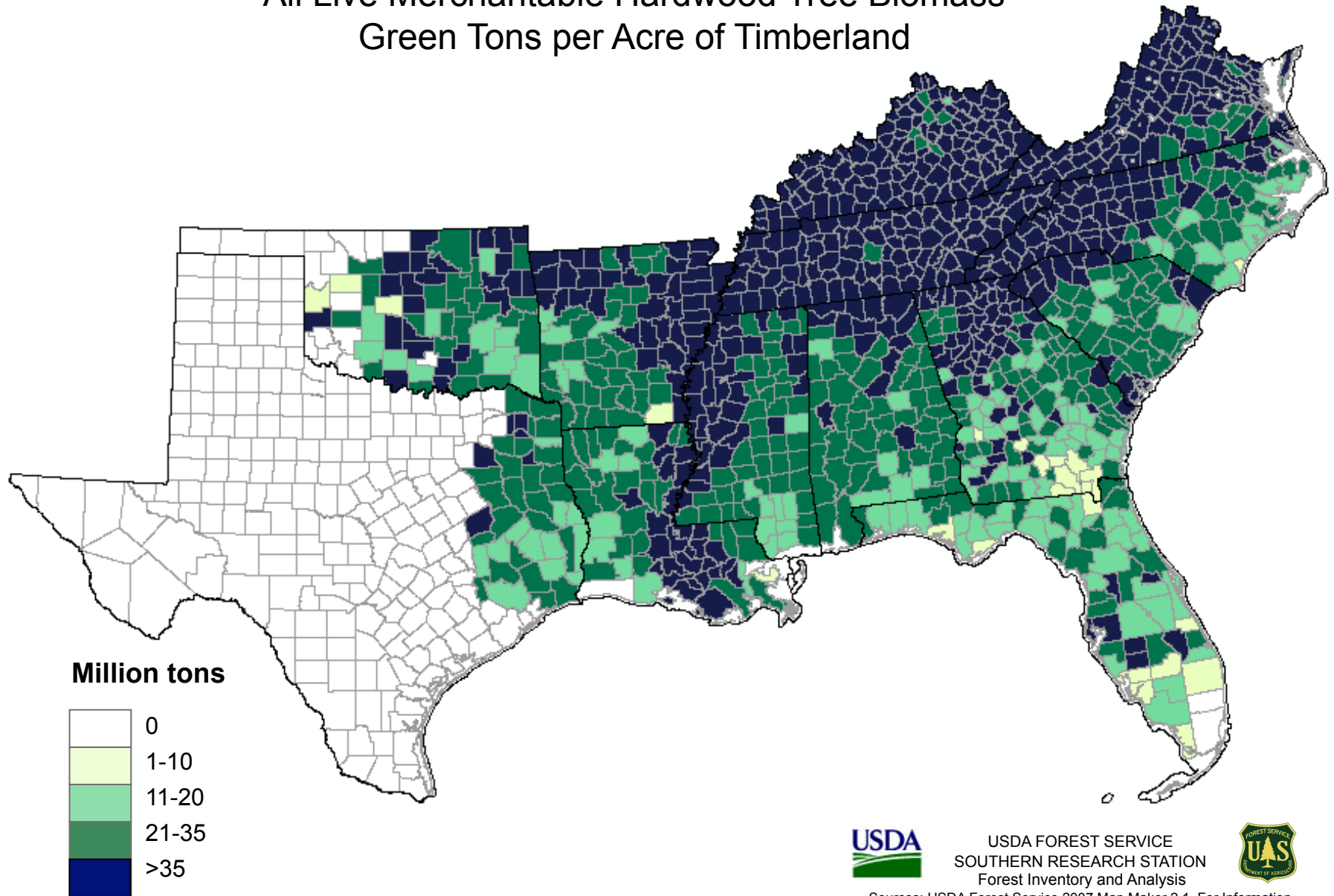


Sources: USDA Forest Service, 2007 Map Maker 2.1. For Information

Visit: <http://www.ncrs2.fs.fed.us/4801/fiadb/>

Produced July 18, 2007. Author Spatial Data Services

All Live Merchantable Hardwood Tree Biomass Green Tons per Acre of Timberland



USDA FOREST SERVICE
SOUTHERN RESEARCH STATION
Forest Inventory and Analysis



Sources: USDA Forest Service, 2007 Map Maker 2.1. For Information

Visit: <http://www.ncrs2.fs.fed.us/4801/fiadb/>

Produced July 18, 2007. Author Spatial Data Services



Georgia's bioenergy industry faces growing pains

By Dan Chapman



The Atlanta Journal-Constitution
3:21 p.m. Friday, January 8, 2010

U.S. factories have the capacity to fill 2.7 billion gallons of biodiesel, but only 15 percent of that amount was produced last year, according to the National Biodiesel Board.

One of the country's most ballyhooed cellulosic ethanol projects, Range Fuels in Soperton, announced big production plans three years ago, but it has yet to produce a gallon for sale. Range, which has received nearly \$100 million in grants, tax breaks and other incentives from the U.S. Department of Energy, the state of Georgia and local sources, expected to begin production last year.

Only 12 will likely "make it," said Forisk's Amanda Lang. Most are "proposed," i.e. awaiting permits, financing, contracts or the technology to make them feasible.

Biomass Feed Stocks



Wood Residues

Harvest and mill residual
Wood waste
pallets
crate discard
wood yard trimmings
clean landfill diversions



Agricultural Residues

Harvest Residue
Stover
Rice hulls
Cotton Gin Waste
Sugarcane bagasse
Animal bio-solids

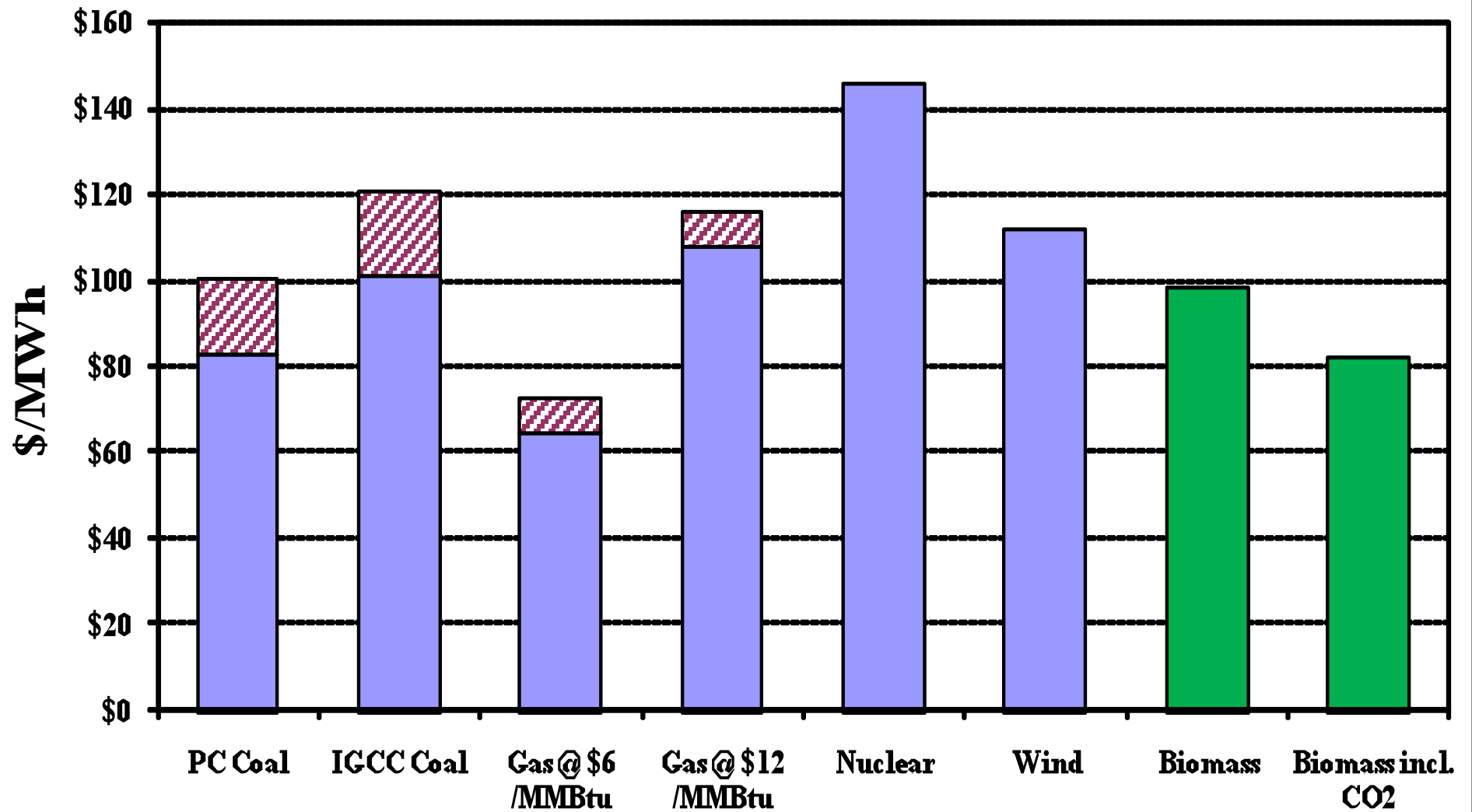


Energy Crops

Hybrid poplar
Switch grass
Willow
Whole Tree
chips

Power Generation Cost

2008 dollars



■ Busbar Cost ■ Including CO2 Cost @ \$20/ton

Trends (Subject to ?)



- Biomass fuel moved from a primitive fuel, to a funny fuel, to a legitimate alternative LOCAL fuel source
- Greater viability attracts greater scrutiny and oftentimes greater unqualified “expertise”
- Capital collapse in 2008 drives development and ownership to have a much larger capital base (both debt and equity)
- Conversions of small coal plants will potentially play a larger role due to enhanced environmental impact
- Co-firing by investor owned utilities will become a larger part of the overall mix
- It is still the energy business, but with more “help” from the government



What Does All This Mean?



Effective and Sustainable Biomass Conversion to Electric Power requires an understanding and an ability to execute (both physically and financially) in the underlying commodity markets for energy (inputs and outputs) as well as navigate the constantly changing forces of policy, regulation and economics.

Historical Business Approach



- Fuels: biomass and natural gas
- Conservative growth strategy
- Marketing through contacts and existing relationships
 - Highly Selective Project Evaluation
- Opportunistic, market-responsive strategy
 - Greenfield development when power markets attractive
 - Special opportunities, i.e., CT Class I renewable market
 - Acquisitions when power markets are low
 - Situations where we can add value
- Ownership strategies
 - Retain ownership in some projects
 - Develop/acquire, improve, and possibly sell

Decker Project Portfolio



Over 20 diverse power projects

- About 1,000 MW of generating capacity
 - Capital cost of nearly \$1 billion
 - Located in 6 states
 - Fuels: wood, natural gas, and waste materials

Decker Project Portfolio



Current Portfolio

- Ownership interests in 2 biomass projects
 - 85 MW capacity
 - \$150 million capital cost
 - Grayling, Michigan and New Bern, North Carolina
- Development Projects
 - 37.5 MW Electric, Plainfield, Connecticut
 - 55 MW Electric, 5MW Thermal, Fitzgerald, GA
 - 60 MW Electric, Ahoskie, NC
 - 50 MW Electric, Lindale, TX
 - 5 - 6 Conceptual projects in process

Grayling Generating Station

Grayling, Michigan



- 37 MW capacity
- \$71,000,000 capital cost
- Fueled by waste wood and tire-derived fuel
- Operational in 1992
- PPA: Consumers Energy
- Received *Powerplant Award* in 1993
- First Biomass Power plant to use SNCR

Craven County Wood Energy

New Bern, North Carolina



- 48 MW capacity
- \$82,800,000 capital cost
- Fueled by waste wood
- Operational in 1990
- Decker Energy acquired 50% interest in 2004
- Power sold into PJM market

Fitzgerald Renewable Energy

Fitzgerald, Georgia



FRE Project Overview

55 MWe (net) + 55,000 pph Biomass-fired Power Generation Facility



- Commercially proven technology to reliably generate power and steam with very low air emissions
- Circulating Fluidized Bed (“CFB”) Boiler provided by AE&E
- Steam Turbine Generator manufactured by Shin Nippon Manufacturing
- Waste fuel from adjacent plywood mill and other fuel sourced through VPA
- Public Utilities; water and wastewater are contracted with the City of Fitzgerald
- Sited on a 60 acre parcel in an industrial park, strategically located next to existing infrastructure
- Strategic Site Location
- Existing forest product industry plants close in proximity
- Project will be connected to Georgia Transmission Corporation at the adjacent 115 kV transmission and substation

HRE Project Overview



- Sited on a 93 acre parcel in an industrial park (initial occupant), strategically located in the heart of immense eastern NC forest
- 115/230 kV transmission right-of-way crosses property to substation 1500 feet from property boundary; process water and sewer to be provided by the City of Ahoskie
- Commercially proven technology to reliably generate power and steam with low air emissions
- Commercial proven Stoker Boiler with advanced emissions control
- Steam Turbine Generator manufactured by Shin Nippon Manufacturing
- Fuel sourced from the surrounding forestry product industries and operations (~18 times the required supply)
- Project will be interconnected to PJM Interconnect via Dominion Transmission
- Process Cooling Water (tertiary treated wastewater) and wastewater provided from the new City of Ahoskie Regional WWTP

Fuel Supply



- Fuel Availability
 - With a 2.0x mill residuals, 4.0x forest residuals and 16.0x whole tree harvest annual supply factor coverage, within 50-miles of the Project, sufficient biomass fuel is available
 - The fuel blend will be comprised of 40% Forest Sourced Residuals, 30% Forest Products Mill Residuals and 40% whole tree from thinning harvests.
 - Local forest consist roughly equal mix of both softwood and hardwood species; these forest sources represent an abundant, consistent, and stable source of fuel
- Competition
 - Competition for biomass fuel within the HRE supply area comes primarily from four pulp mills and six saw mills.
 - These plants help maintain an economical supply of waste biomass and lower the cost of collection and processing the fuel.
 - There is currently no competition from bio-energy companies for biomass fuel within 50-mile supply radius for HRE today. The biomass demand from some proposed bio-energy plants could eventually overlap the HRE supply area
 - HRE's "first-position" advantage will likely limit future new project development

Fuel Supply

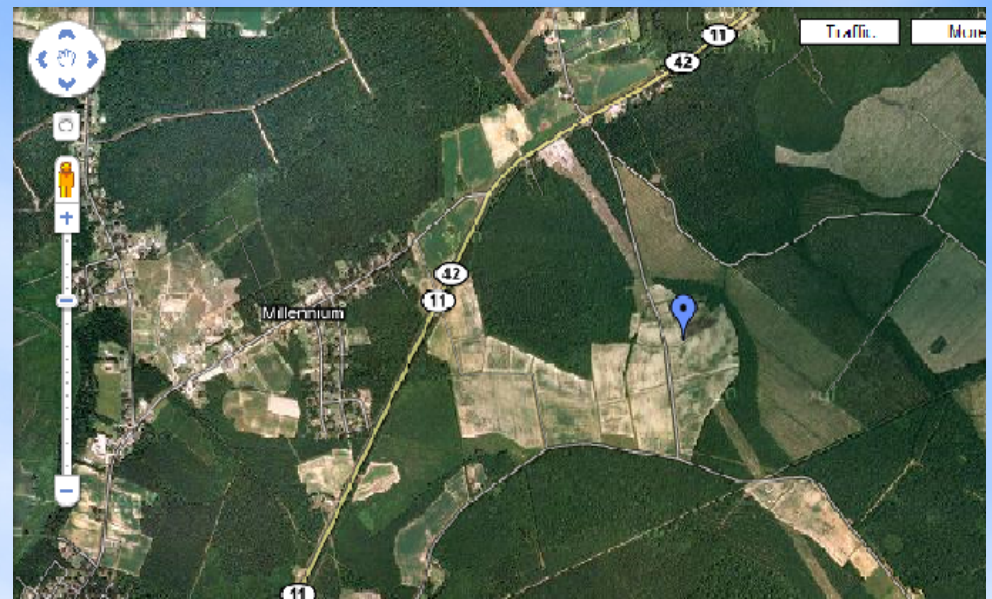


- Fuel Pricing
 - The price of biomass fuel, within the 50-mile radius of the plant, is projected to increase roughly 1% per year through 2014
- Fuel Price Collar
 - A Fuel Price Collar that limits the costs and benefits of changes in fuel prices to no more than + or – 12.5% of an Initial Fuel Index
 - In order to create fairness and to independently monitor pricing, triggers on the Fuel Collar are benchmarked to both actual costs of biomass, and the Fuel Index
 - The counterparties for the Collar are HRE and PPA Buyer

Estimated Project Budget



EPC Contract	\$141,500
Owner Contingency	\$10,575
	\$151,575
Land	625
Start-up Operations	2,000
Electric and Water Connections	1,200
Owner-Supplied Equipment	300
Spares, Materials & Supplies	1,000
Legal	500
Wood Fuel Inventory	1,000
Working Capital	1,000
Development Costs	1,000
Development Fees	2,000
Owner Provided Construction Insurance	2,500
Owner's Construction Management	854
Other Project Costs	\$13,979
Debt Service Reserve	11,000
O&M Reserve	Operating Cost
Financing Fees and Expenses	200
Interest During Construction	15,425
Total Financing Costs	\$26,625
TOTAL PROJECT COST	\$192,679



Conclusions



- Project Participants
 - Experienced and qualified project participants capable of developing, constructing and operating a state-of-the-art facility
- Project Design and Operation
 - Site, structural design and technology suitable for facility
 - Plant and control equipment configured with a typical level of redundancy
 - Useful life to extend beyond 30 years
- Construction and Project Budget
 - Contractor to have the experience and background necessary to successfully complete the Project
 - Comprehensive Contract for scope of work
 - \$2,400/kW reasonable cost estimate
 - LDs will be adequate relative to HRE's potential damages under the PPA
- Transmission and Interconnection
 - Project should adequately conform to requirements of interconnection and system design and operating requirements that are typical for the industry

Conclusions (cont)



- Environmental
 - No permitting flaws were identified which would impact Project
 - 401 and 404 WQ, Storm Water as well as Erosion and Sediment Control permits issued
 - Air Permit issued 12/27/20098 with Public Comment ending 11/27/2009
 - Draft Environmental Report should result in a Finding of No Significant Impact
- Operation and Maintenance
 - Design and Projected Availabilities of the Project provide the capability to be able to avoid the Unavailability Adjustment under the PPA
 - HRE has the necessary experience and proper qualifications to successfully operate the Project
- Power Purchase Agreement
 - Project is capable of delivering 60 MW plus of capacity through the term of the agreement
 - Project will be able to maintain an overall availability of 90%, (PPA requires about 88%).
- Projected Operating Results
 - Base-case and downside scenarios demonstrate sufficient capacity to service debt during the term of the credit facilities and to support alternative long-term financing scenarios
 - Estimated costs and contingencies are within the expected range for a facility of this type

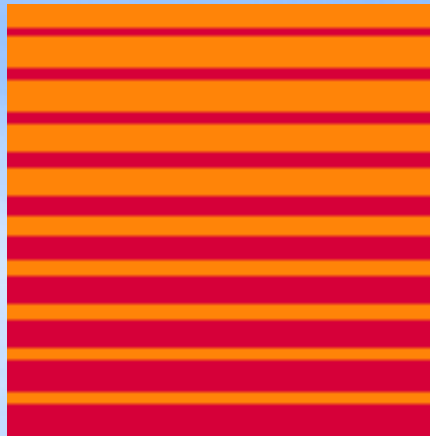
HRE – Investment Considerations



- **Strong and Experienced Owner**
 - Decker Energy International
- **Limited Long Term Equity Commitment**
 - Long Term Debt - \$132.8 million
 - Federal Grant - \$49.8 million
 - Long Term Equity - \$9.9 million
- **Limited Construction Risk**
 - The Project will enter into a fixed price, date-certain, turn-key EPC Contract for \$141.5 million which equates to approximately 90% of total “hard” Project Costs



Questions?



DECKER ENERGY INTERNATIONAL, INC.

152 LINCOLN AVENUE
WINTER PARK, FLORIDA 32789

(407) 628-8900
WWW.DECKERENERGY.COM

Marvin S. Burchfield. VP
msburchfield@deckerenergy.com